REMARKS

Initially, it is noted that claim 1 has been amended to include the limitations of claims 4 and 5 and to recite that the preform is used for injection molding of a fiber reinforced plastic. Claims 4 and 5 have been canceled.

Referring to the Action, the claims have been amended to overcome the 35 U.S.C. § 112, second paragraph, rejection. First, the limitation "each of said reinforcing fiber substrates is fixed in its fabric style", originally recited in claim 4, has been amended in claim 1 to --each of said reinforcing fiber substrates is fixed to each other in the preform--. Second, the acronym "FRP" has been deleted from the claims and has been replaced by the terminology --fiber reinforced plastic--.

Removal of the 35 U.S.C. § 112, second paragraph, rejection is requested.

In the Action, claims 1-8 and 11-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishimura et al., U.S. Patent No. 4,786,541 ("Nishimura"), in view of Fairbanks, U.S. Patent No. 6,106,646. Claims 9 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishimura in view of Fairbanks and further in view of Wadahara et al., U.S. Patent Application Publication No. 2004/0170554 A1 ("Wadahara").

Reconsideration of these rejections is requested.

As noted above, claim 1 has been amended to include the limitations of claims 4 and 5. More particularly, claim 1 has been amended to recite that in the preform of the present invention, which is formed with a plurality of reinforcing fiber substrates stacked to each other and each made of at least reinforcing fiber yarns and comprises through holes which extend through a plurality of said reinforcing fiber substrates in a thickness direction of said preform, each of said reinforcing fiber substrates is fixed to each other in the preform; and a resin material, whose main component is a thermoplastic resin, is interlaminated between layers of said reinforcing fiber substrates in said preform, a content of said resin material being in a range of 1 to 20% by weight relative to said preform.

The combination of Nishimura and Fairbanks, alone and in view of Wadahara, fails to disclose or suggest a preform having the structural elements as recited in claim 1 and the claims dependent thereon.

The object underlying the present invention is to provide an improved preform for providing an FRP (Fiber Reinforced Plastics) of higher quality and stability, wherein in particular the

impregnability in a plate thickness direction of the preform is enhanced.

By using a preform wherein a resin material, whose main component is a thermoplastic resin, is interlaminated between layers of reinforcing fiber substrates in said preform, the content of the resin material being in a range of 1 to 20% by weight relative to the preform, as a means for fixing the reinforcing fiber substrates, the shapes of through holes extending through the reinforcing fiber substrates can be stably fixed without reducing the properties of the reinforcing fiber substrates themselves, and a flow path for stably flowing a matrix resin can be formed.

In a case where such a fixing means for the reinforcing fiber substrates is not present, after the through holes are opened, the yarns return to the original shapes by a reactive force, and the holes may be closed. However, in the present invention, by using the above-described resin material interlaminated between layers of reinforcing fiber substrates, through holes can be stably formed by the effect of the heat adhesion of the resin material. Also, because the content of the resin material is controlled to be between 1 and 20% by weight, a reduction of the reinforcing fiber volume content can be prevented and flow paths ensured in the

preform so that the impregnation of matrix resin carried out later is not hindered (refer to paragraphs [0027] and [0038]).

Nishimura discloses a fiber material for reinforcing plastics prepared by laminating at least one first fiber substrate in which the reinforcing fibers extend in two directions. Nishimura discloses an embodiment in which a reinforcing fiber material is constructed by laminating a plurality of substrates and integrating these by stitch yarns.

Fairbanks discloses a method for joining a plurality of layers of non-fully cured composite material, including layers comprising a fiber reinforced polymeric matrix. Fairbanks discloses fiber reinforced perforated composite in which through holes are formed for integrating these by stitch yarns later.

Neither Nishimura nor Fairbanks, nor the combination thereof, discloses or suggests a preform wherein a resin material, whose main component is a thermoplastic resin, is interlaminated between layers of reinforcing fiber substrates in said preform, a content of said resin material being in a range of 1 to 20% by weight relative to said preform. The prior art fails to recognize the materiality of the amount of a thermoplastic resin, as required in the present invention, used for forming the fiber reinforced structures and for fixing the reinforcing fibers such that the

thorough holes are formed stably, providing flow paths for stably flowing a matrix resin.

Wadahara is cited by the Office merely as teaching the use of resins in the form of fabric, particles and discontinuous pieces and fails to overcome the insufficiencies of the combination of Nishimura and Fairbanks.

The prior art fails to support a prima facie case of obviousness under 35 U.S.C. § 103(a) of the preform and fiber reinforced plastic of the present invention. Removal of the 35 U.S.C. § 103(a) rejections is in order and is respectfully solicited.

In the event that this paper is not considered to be timely filed, applicants hereby petition for an appropriate extension of time. The fee for any such extension and any additional required fees may be charged to Deposit Account No. 111833.

Respectfully submitted,
KUBOVCIK & KUBOVCIK

Ronald J. Kubovcik
Reg. No. 25,401

Crystal Gateway 3
Suite 1105
1215 South Clark Street
Arlington, VA 22202
Tel: (703) 412-9494
Fax: (703) 412-9345
RJK/KTK/esc